OPERATION MANUAL

INFRARED THERMOMETER

Features:

- Precise non-contact measurements
- Built-in laser pointer
- Resolution to 0.1º
- CAL（caution temperature setting）button
- Green LED normal temperature indication & red LED high temperature caution
- Automatic Data Hold & Auto power off
- The meter at 8 inches away measure 1 inch target
- Backlit LCD display

Wide range application:

Food preparation, Safety and Fire inspectors, Plastic molding, Asphalt, Marine and screen printing, measure ink and dryer temperature, Diesel and Fleet maintenance.

This instrument can measures body heat surface temperature.

Field of View

Meter's field of view is 8:1, meaning that if the meter is 8 inches from the target, the diameter of the object under test must be at least 1 inch. Other distances are shown below in the field of view diagram. Refer to the chart printed on the meter for more information.

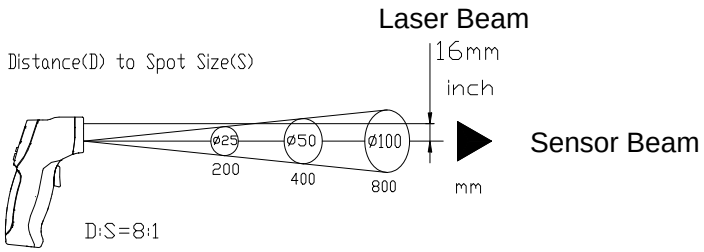


Fig: 1

1. SAFETY

- Use extreme caution when the laser beam is turned on.
- Do not let the beam enter your eye, another person's eye or the eye of an animal.
- Be careful no to let the beam on a reflective surface strike your eye.
- Do not allow the laser light beam impinge on any gas which can explode.

2. SPECIFICATIONS

- **General specifications**

DISPLAY	3-1/2 digit (1999count) LCD with backlighting
MEAS. RANGES	-50.0℃ to 199.9℃ (-58.0℉ to 199.9℉)
SAMPLE RATE	2.5 times/second.
OVER RANGE INDICATION	LCD will show “1”
POLARITY	Automatic (no indication for positive polarity); Minus (-) sign for negative polarity.
EMISSIVITY	0.95 fixed value
FIELD OF VIEW	D/S = Approx. 8:1 ratio (D = distance, S = spot) (Has 90% encircled energy at the focal point)
DIODE LASER	Output <1mW, Wavelength 630~670nm,class 2 (II) Laser product
SPECTRAL RESPONSE	6~14um
POWER OFF	Automatic shut off after 7 seconds, approx.
OPERATING TEMP.	0℃ to 50℃ (32℉to 122℉)
STORAGE TEMP.	-20°C to 60°C(-4°F to 140°F)
RELATIVE HUMIDITY	10%~90%RH operating, <80%RH storage
POWER SUPPLY	9V battery, NEDA 1604A or IEC 6LR61, or equivalent
WEIGHT	180g.
SIZE	82 x 41.5 x 160mm

- **Infrared thermometer specifications**

<table>
<tr><th colspan="2">Range</th><th>Resolution</th><th>Accuracy</th></tr>
<tr><td rowspan="2">-50.0°C to 199.9°C
(-58.0℉ to 199.9℉)</td><td>-50.0°C to -20.0°C
(-58.0℉ to -4.0℉)</td><td rowspan="2">0.1°C
(0.1℉)</td><td>± 5°C(± 9℉)</td></tr>
<tr><td>-20.0°C to 199.9°C
(-4.0℉ to199.9℉)</td><td>± 2% of reading or ± 2°C (± 4 ℉);</td></tr>
</table>

Note:

Accuracy is given at 18 °C to 28 °C (64 ^{0}F to 82 ^{0}F), less than 80%RH.

Field of View:

Make sure that the target is larger than the unit’s spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

Emissivity:

0.95 fixed value

Forehead Temperature Range	**Resolution**	**Accuracy**
30.0°C～45.0°C	0.1	±0.4°C

Contrasting form of forehead and actual body temperature：
（data in the table is only for reference）

Forehead temp.	34.0℃	35.0℃	35.6℃	35.8℃	36.0℃	36.2℃	36.4℃	37.0℃
Actual temp.	36.2℃	37.0℃	37.5℃	37.7℃	37.8℃	38.0℃	38.1℃	38.5℃

NOTES:

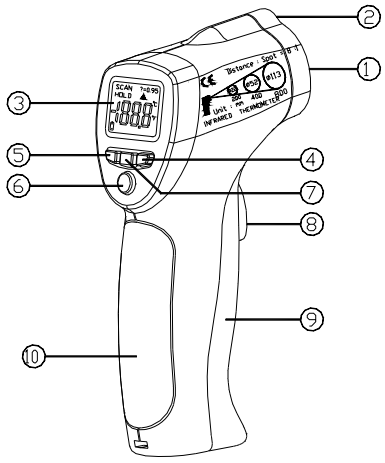
1、 don’t wear caps or cover forehead when measuring (respirator mask is allowed)

2、 when measuring the surface of forehead, make sure the meter point to the center of forehead and keep vertical ！ Hair or other objects on the measuring position will influence the measuring results.

When measuring people or objects from outdoors or places where the temperature is very different from the measured ambient temperature，he should stay in the measuring condition for at least 2minutes until the temperature is the same as the ambient, or the result will be influenced.

if the meter is taken out from the place where the temperature is very different from measured ambient temperature，please put it in the measured environment for at least 20mins before use.

3. FRONT PANEL DESCRIPTION



① IR sensor
② Laser pointer beam
③ LCD Display
④ Laser select key
⑤ CAL（caution temperature setting）button
⑥ Green LED normal temperature indication & red LED high temperature caution
⑦ Backlight select key
⑧ Measurement Trigger
⑨ Battery Cover
⑩ Handle Grip

4. INDICATOR

① Digital readout

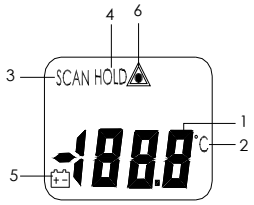
② Temperature ℃ (Celsius)

③ Measuring indication

④ Data Hold

⑤ LOW battery indicator

⑥ Laser Point



5. MEASURMENT OPERATION

① Hold the meter by its **Handle Grip** and point it toward the surface to be measured. if it ‘s up to or above the preset caution temperature (such as: temp≥36.5ºC)，the red caution light will turn on while the green off，and the alarm will sounds ”di di”.

② Pull and hold the **Trigger** to turn the meter on and begin testing. The display will light if the battery is good. Replace the battery if the display does not light.

③ While measuring, the SCAN display icon will appear in the upper left hand corner of the LCD.

④ While continuing to pull the Trigger:

a. Push the **Laser** button to turn on the laser pointer. When the laser is on the laser icon will appear on the LCD over the temperature. Aim the red beam approximately a half inch above the point of test (pressing the Laser button again turns the laser off).

b. Push the **Backlight** key to turn on the LCD backlighting function.

⑤ Release the Trigger and the HOLD display icon will appear on the LCD indicating that the reading is being held.

⑥ The meter will automatically power down after approximately 7 seconds after the trigger is released.

FOREHEAD TEMPERATURE MEASURMENT OPERATION

① Hold the handle grip of the meter and point to the center of forehead，the measuring distance≤10cm，the measuring time≤3s。

② pull the measuring trigger，the thermometer will be power on automatically and show the data on the LCD indicator. If the temperature is normal, the green light will turn on; and if it ‘s up to or above the preset caution temperature (such as: temp≥36.5ºC)，the red caution light will turn on while the green off，and the alarm will sounds ”di di”.

Note: Measurement considerations

Holding the meter by its handle, point the IR Sensor toward the object whose temperature is to be measured. The meter automatically compensates for temperature deviations from ambient temperature. Keep in mind that it will take up to 30 minutes to adjust to wide ambient temperatures are to be measured followed by high temperature measurements, some time (several minutes) is required after the low (and before the high) temperature measurements are made.

This is a result of the cooling process which must take place for the IR sensor.

how to set the caution temperature：

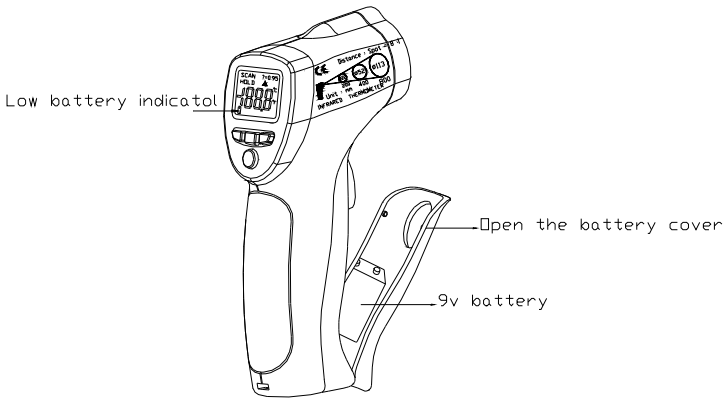
Continuing to pull the trigger，press the “CAL”(caution temperature setting)on the control panel with your left thumb,（green indicating light and “SCAN ”display icon are off），hold a screwdriver in your right hand to screw the electric potential on the “CAL” icon of the trigger panel. Meanwhile, look at the LCD indicator and observer the setting caution temperature to get an ideal one. After done, release the “caution temperature setting” button, remove the screwdriver and come back to normal measurement.

Note: the caution temperature (CAL) had been set when the meter produced in the factory, CAL=36.5ºC- is probably equal to the body temperature 38.15℃. Please do not change it at the usual time. While using, user can change it relevantly according to the environmental temperature and practical condition.

6. BATTERY REPLACEMENT

① As battery power is not sufficient, LCD will display “ ” replacement with one new battery type 9V is required.

② Open battery cover, then take out the battery from instrument and replace with a new 9-Volt battery and place the battery cover back.



7. **NOTES:**

- ***How it Works***

  Infrared thermometers measure the surface temperature of an object. The unit’s optics sense emitted , reflected, and transmitted energy, which is collected and focused onto a detector. The unit’s electronics translate the information into a temperature reading which is display on the unit. In units with a laser, the laser is used for aiming purposes only.

- ***Field of View***

  Make sure that the target is larger than the unit’s spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

- ***Distance & Spot Size***

  As the distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger. See: **Fig: 1**.

- ***Locating a hot Spot***

  To find a hot spot aim the thermometer outside the area of interest, then scan across with an

up and down motion until you locate hot spot.

- ***Reminders***

① Not recommended for use in measuring shiny or polished metal surfaces (stainless steel, aluminum, etc.).See **Emissivity**

② The unit cannot measure through transparent surfaces such as glass. It will measure the surface temperature of the glass instead.

③Steam, dust, smoke, etc., can prevent accurate measurement by obstructing the unit's optics.

- ***Emissivity***

Most (90% of typical applications) organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit). Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate, cove the surface to be measured with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.

Emissivity Values

Substance	Thermal emissivity	Substance	Thermal emissivity
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Human skin	0.95 to 0.98
Cement	0.96	Lather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Earth	0.92 to 0.96	Lacquer	0.80 to 0.95
Water	0.92 to 0.96	Lacquer (matt)	0.97
Ice	0.96 to 0.98	Rubber (black)	0.94
Snow	0.83	Plastic	0.85 to 0.95
Glass	0.90 to 0.95	Timber	0.90
Ceramic	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	Chromium oxides	0.81
Plaster	0.80 to 0.90	Copper oxides	0.78
Mortar	0.89 to 0.91	Iron oxides	0.78 to 0.82
Brick	0.93 to 0.96	Textiles	0.90